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Letter

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On Plaintiffs' Strategic Information Acquisition and Disclosure during Discovery

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Abstract: We analyze how a plaintiff acquires damage-level information and discloses it to the defendant during the discovery process when the plaintiff knows that the defendant is privately informed about the plaintiff's probability of winning at trial. The plaintiff can design the process for generating the damage-level information but cannot omit or misrepresent it. She does this with an understanding of how the defendant's updated beliefs after the discovery stage will impact pretrial negotiations. We find that the plaintiff prefers full disclosure when deciding between a pooling or a screening settlement demand depends on the damages level. In other scenarios, she is indifferent to how much information the discovery stage conveys about the damage level to the defendant.

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1 Introduction

Settlement bargaining unfolds in the shadow of expectations about the trial outcome. The defendant's willingness to accept a settlement demand depends on

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the damages the defendant expects to pay when he loses the case in court. The defendant's expectation about damages results from prior information and information created during the discovery process. Discovery is a distinctive feature of American litigation (Klerman 2015). According to Rule 26(a) of the Federal Rules of Evidence, a litigant must provide the other party with a computation of damages based on the reasonably available information during initial disclosure.

This paper analyzes the plaintiff's decisions regarding acquisition and disclosure of information about the damages level during discovery. This information is relevant for the defendant to assess the expected cost from a trial (i.e. the willingness to settle). Initially, the plaintiff ("she" in the following) and the defendant ("he") have shared beliefs about trial damages, which can be high or low in our setup, while the defendant has private information about the plaintiff's probability of winning, which can also take one of two values independently of the damage realization. The plaintiff can inquire about damages at no cost. We assume she can design the information-gathering process as a mean-preserving spread of damage levels; that is, we assume that the plaintiff is transparent about how the information will be generated and will reveal all relevant information, which matches what is mandated by law for the discovery process and backed by various sanctions (Cooter and Rubinfeld 1994). The outcome of the inquiry can be fully informative (revealing the level of damages), partially informative (leaving some uncertainty about damages), or uninformative (providing no additional information about damages), which is well captured by the representation via a mean-preserving spread. The information generated during discovery forms the posterior the parties use in their settlement negotiations after discovery.

We find that the plaintiff prefers full-information revelation when the optimal kind of settlement demand, either a screening or a pooling demand, depends on damages and is indifferent about the exact information design otherwise. She never strictly prefers to reveal information *partially*. The rationale is that the plaintiff chooses the information design to differentiate scenarios where a pooling demand (i.e. a demand that all defendant types accept) is adequate from settings where a screening demand is preferred. In other words, the fact that the defendant's willingness to settle responds to the information generated during discovery does not motivate the plaintiff to distort the information acquisition strategically. The plaintiff's design aims to enable her to make an adequate choice given the circumstances and does not seek to manipulate the defendant's willingness to settle.

This paper contributes to the literature on legal discovery (e.g. Klerman 2015) and, more broadly, to the literature on the economic analysis of litigation (e.g. Spier 2007). In our setup, the plaintiff can create a mean-preserving spread to influence subsequent decision-making. In the literature on Bayesian persuasion, one party makes such a spread to affect other parties' decisions (e.g. Ayouni, Friehe, and Gabuthy 2024; Kamenica 2019; Kamenica and Gentzkow 2011; Little 2023). In our setting, it turns out that the plaintiff is not using the possibility to create a mean-preserving spread to influence the defendant's acceptance choice during pretrial bargaining but to ensure that her demand is optimally tailored to the circumstances.

The rest of the paper is structured as follows: Section 2 presents the model, Section 3 presents the analysis, and Section 4 concludes.

2 Model

A plaintiff has filed a claim against a defendant. The plaintiff's damages t are unknown at the beginning of the interaction, where $t \in \{\underline{t}; \bar{t}\}$ and $0 < \underline{t} < \bar{t}$. The prior for $\underline{t}$ amounts to μ, leading to expected damages $t_0 = \mu\underline{t} + (1-\mu)\bar{t}$. For example, the plaintiff may initially not know the damages level when nonpecuniary harm, such as pain and suffering, is involved. A reasonable estimate of the court's willingness to increase awards on account of nonpecuniary harm may require an expert's opinion. The defendant is privately informed about the plaintiff's winning probability (e.g. Bebchuk 1984). With probability α, the plaintiff's winning probability p amounts to p_L. Otherwise, it equals p_H, where $0 < p_L < p_H < 1$ and $p_0 = \alpha p_L + (1-\alpha)p_H$. The winning probability p is independent of the damages t. Trial implies a cost c_P (c_D) for the plaintiff (defendant), where we assume that $p_L\underline{t} > c_P$ to ensure trial incentives. We abstract from legal representation.

The plaintiff can inquire into which damages level applies. Her inquiry may involve contracting with an expert about the damages assessment. The inquiry induces an update regarding the expected damages, leading to either t_1 or t_2 with (t_1, t_2) being a *mean-preserving spread* where $\underline{t} \leq t_1 < t_0 < t_2 \leq \bar{t}$ and

$$t_0 = \pi t_1 + (1-\pi)t_2$$

with

$$\pi = \frac{t_2 - t_0}{t_2 - t_1},$$

which is increasing in t_1 and t_2. The inquiry's informativeness is commonly known. For example, the plaintiff and the defendant understand the expert's reputation. *Full* revelation would imply that $t_1 = \underline{t}$ and $t_2 = \bar{t}$. In contrast, partial revelation implies $t_1 \geq \underline{t}$ and $t_2 \leq \bar{t}$ with at least one strict inequality. For simplicity, all possible information designs have the same cost for the plaintiff, normalized to zero.

The timing of the model is as follows: In Stage 1, the plaintiff chooses how to conduct the inquiry, implying the selection of the mean-preserving spread (t_1, t_2). The outcome of the inquiry is realized and observed by the plaintiff and the defendant.

In Stage 2, the plaintiff demands a settlement amount of s. In Stage 3, the defendant chooses between acceptance and rejection, where the former ends the game, and the latter triggers a trial where payments happen according to the actual p and t.

3 Analysis

We solve the game by backward induction.

3.1 Stage 3: Defendant's Acceptance

After observing the inquiry's outcome t_i, $i = 1, 2$, defendant type p_j, $j = L, H$, has an expected trial cost of $p_j t_i + c_D$, and will accept any settlement demand at most as high.

3.2 Stage 2: Plaintiff's Settlement Demand

After observing the inquiry's outcome t_i, the plaintiff may ask for $s_{L,i} = p_L t_i + c_D$ which will always be accepted by the defendant or $s_{H,i} = p_H t_i + c_D$ which will be accepted only by a defendant type p_H. The plaintiff chooses the pooling demand $s_{L,i}$ if and only if

$$s_{L,i} \geq \alpha(s_{L,i} - c_D - c_P) + (1-\alpha)s_{H,i},$$

that is, if and only if

$$\alpha \geq \alpha_i = \frac{\Delta_p t_i}{\Delta_p t_i + c_D + c_P} \tag{1}$$

where $\Delta_p = p_H - p_L$.

3.3 Stage 1: Plaintiff's Inquiry Design

The plaintiff understands how she will choose the demand in Stage 2 and can influence her choice by selecting the mean-preserving spread in Stage 1. The population share α will be sufficient as to induce demand $s_{L,i}$ only if

$$t_i \leq \frac{\alpha}{1-\alpha} \frac{(c_D + c_P)}{\Delta_p} = \hat{t},$$

which follows from a restatement of the inequality in (1).

As a result, if $\hat{t} < \underline{t}$, the plaintiff will *always* ask for the screening settlement demand $s_{H,i}$ when the expected damages t_i apply (which induces payoffs $p_L t_i - c_P$ if the defendant type is p_L and $p_H t_i + c_D$ if the defendant type is p_H). She will *always* ask for the pooling demand $s_{L,i}$, which induces payoffs $p_L t_i + c_D$, if $\hat{t} > \bar{t}$. However, when $\hat{t} \in (\underline{t}, \bar{t})$ applies instead, she can always choose between two alternatives: the new alternative consists of choosing $t_1 < \hat{t} < t_2$ and asking for a demand that pools both defendant types when t_1 applies and a demand that screens defendant types when t_2 applies. If $\hat{t} > t_0$, this alternative must be compared to choosing $t_1, t_2 < \hat{t}$ and always asking for the pooling demand. If $\hat{t} < t_0$, this alternative must be compared to choosing $t_1, t_2 > \hat{t}$ and always asking for the screening demand.

Intuitively, the threshold $\hat{t}$ is the ratio of the expected litigation cost effect from not settling with defendants of type p_L (given by $\alpha(c_P + c_D)$) and the reduction in settlement payments from defendants of type p_H when using the pooling demand (given by $(1-\alpha)\Delta_p$). The ranking $\hat{t} > \bar{t}$ indicates that the expected litigation cost effect dominates the reduction in settlement payments. In this case, the plaintiff prefers to ask for the pooling demand after t_1 and t_2 to save on litigation costs. Conversely, if $\hat{t} < \underline{t}$, the reduction in settlement payments from defendants of type p_H is the more critical aspect and induces the plaintiff to be aggressive by always asking for the screening settlement demand.

The plaintiff's expected payoffs in Stage 1 amount to:

$$\Pi^P = \begin{cases} p_0 t_0 + c_D - \alpha(c_P + c_D) & \text{if } \hat{t} < t_1 \\ \alpha p_L t_0 + (1-\alpha)(\pi p_L t_1 + (1-\pi) p_H t_2) + c_D - \alpha(1-\pi)(c_P + c_D) & \text{if } \hat{t} \in (t_1, t_2) \\ p_L t_0 + c_D & \text{if } \hat{t} \geq t_2 \end{cases}$$

If $\hat{t} < \underline{t}$ ($\hat{t} > \bar{t}$), only the first (third) line applies for all possible mean-preserving spreads. In these cases, the plaintiff's expected payoff is independent of (t_1, t_2). To find the privately optimal information design when $\underline{t} \leq \hat{t} \leq \bar{t}$ applies, we have to determine the second line's maximum and compare it to the other payoffs. The marginal effect of t_1 on the payoffs in the second line is:

$$\frac{\pi}{t_2 - t_1}(1-\alpha)\Delta_p\left(\hat{t} - t_2\right),$$

which is negative in the relevant range of $\hat{t}$. In contrast, the marginal effect of t_2

$$\frac{1-\pi}{t_2 - t_1}(1-\alpha)\Delta_p\left(\hat{t} - t_1\right)$$

is positive in the relevant range. This means that the maximized level of the payoff in the second line uses $(t_1, t_2) = (\underline{t}, \bar{t})$ and can be stated as follows (using that $\pi = \mu$ in this case),

$$\hat{\Pi}^P = \alpha p_L t_0 + (1-\alpha)(\mu p_L \underline{t} + (1-\mu) p_H \bar{t}) + c_D - \alpha(1-\mu)(c_P + c_D) \tag{2}$$

We find that $\hat{\Pi}^P > p_0 t_0 - \alpha c_P + (1-\alpha)c_D$ can be reduced to $\underline{t} < \hat{t}$, which must hold for the payoff in the second line to be feasible. Similarly, we reduce $\hat{\Pi}^P > p_L t_0 + c_D$ to $\bar{t} > \hat{t}$, which must also hold for the payoff in the second line to be feasible.

In summary, when $\hat{t} \in (\underline{t}, \bar{t})$, the plaintiff chooses $(t_1, t_2) = (\underline{t}, \bar{t})$, showing a preference for *full revelation*. The intuition runs as follows: when $\hat{t} \in (\underline{t}, \bar{t})$, the plaintiff knows that a pooling offer is preferable when $t = \underline{t}$ applies, while a screening offer is better when $t = \bar{t}$ holds. Any $t_1 > \underline{t}$ results only if some states of the world, in which $t = \bar{t}$ holds, induce the posterior t_1, and then trigger the pooling demand (and likewise for $t_2 < \bar{t}$). Our analysis shows that this cannot be optimal for the plaintiff.

We summarize in:

Proposition 1. (i) *When $\hat{t} \in (\underline{t}, \bar{t})$, the plaintiff fully reveals the damages level during the discovery process. (ii) When $\hat{t} < \underline{t}$ or $\hat{t} > \bar{t}$, the plaintiff is indifferent regarding the information revelation during the discovery process. (iii) For given litigation costs and probabilities of winning, intermediate shares of defendants with a high probability of winning make it more likely that the plaintiff desires full information.*

4 Conclusions

During the discovery process, litigants must provide relevant information – for example, about damages – to the other party. The information presented during discovery influences beliefs, an essential input for settlement negotiations. We have analyzed how the plaintiff acquires and discloses information about the relevant damages level. We restricted the plaintiff's inquiry design to a mean-preserving spread, excluding omission and misrepresentation of information.

We find that the plaintiff strictly prefers full revelation of damage-level information when the population share of defendants with a high probability of winning the trial is in an intermediate range. At the extreme ends (i.e. with very many or very few defendants with a high winning probability), the plaintiff's payoffs are independent of the exact information design. The plaintiff never prefers partial revelation.

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